

AQUARIUSTM
HOME COMPUTER SYSTEM

4394-0920

DATA RECORDER

OWNER'S GUIDE



MATTEL ELECTRONICS®

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INTRODUCTION

YOUR AQUARIUS™ DATA RECORDER

WHAT DOES IT DO?

The Aquarius™ Data Recorder takes program information from your Aquarius™ Home Computer System and records it on an ordinary cassette. Later on, when you need to use this information, the Data Recorder takes the same information again from the recorded tape and puts it back into the memory of your Aquarius™ Home Computer System, making the program readily available for further use.

HOW DOES IT DO IT?

Your Aquarius™ Data Recorder copies electrical impulses on magnetic tape, much in the same way a tape deck records music off a phonograph or a video cassette recorder copies a television broadcast. Just as either of those types of recorders are designed for a special job, the Aquarius™ Data Recorder is designed specifically to work with your Aquarius™ Home Computer System. It plugs right into your computer and gives you an easy, effective and low-cost way to store program information. As you might readily imagine, (and you'd be right) this makes your Aquarius™ Data Recorder a little different from an ordinary sound/music recorder.

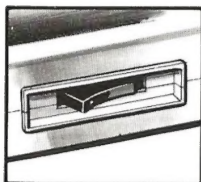
First of all, your AquariusTM Data Recorder is a “smart” recorder. The AquariusTM Data Recorder can recognize data as it comes out of or goes into the AquariusTM Home Computer System’s memory, speeding it up or slowing it down so that it can be correctly stored and recalled the very first time. The AquariusTM Data Recorder even lets you know when it is handling the data. An ordinary recorder can’t do that.

Second, because of its special design there’s no need for speakers or a volume control on the AquariusTM Data Recorder. This means that you cannot play and listen to pre-recorded music cassette tapes on your Aquarius Data Recorder. Although you can use most regular sound/music recorders in combination with your AquariusTM Home Computer System, their sound-oriented technology means you will constantly be adjusting the volume to control the intensity of the signal that sends data from your computer to your recorder; otherwise, it may not record a program properly.

Because the AquariusTM Data Recorder is “data-sensitive” it automatically adjusts the signal. As soon as it begins handling data, it flashes a tiny indicator light. It doesn’t need a speaker, of course, because it wasn’t designed to do anything but help your AquariusTM Home Computer System store program data until it is needed. Of course, both of them need you, the user, to tell them exactly what you’d like them to do.

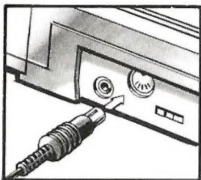
CHAPTER 1 SET-UP AND CONTROLS

HOW TO INSTALL:



Actual set-up of your Aquarius™ Data Recorder with your Aquarius™ Home Computer System is as easy as following the illustrated steps below.

1. If your Aquarius™ Home Computer System is already up and running, please turn it off.



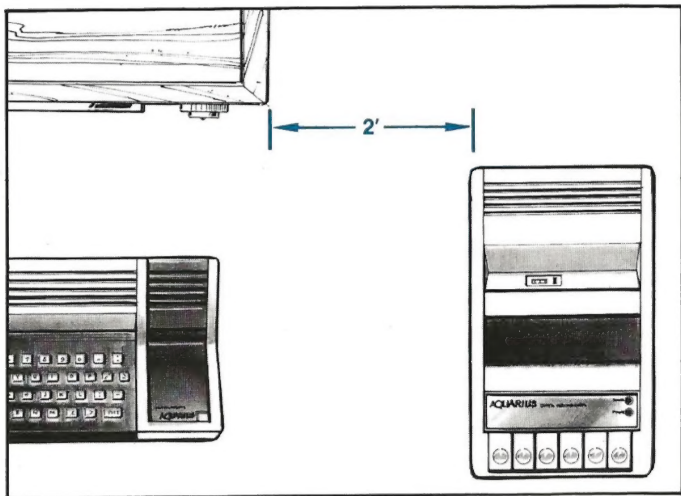
2. See the data cord that comes with your Data Recorder? Take the plug that has five pins and plug it into the socket or jack at the back of the computer that is made to take five pins.



3. Next, take the two plugs at the opposite end of the data cord and carefully fit them into the jacks on the back of your Data Recorder. EAR plug fits into the EAR jack; MIC plug fits into the MIC jack.

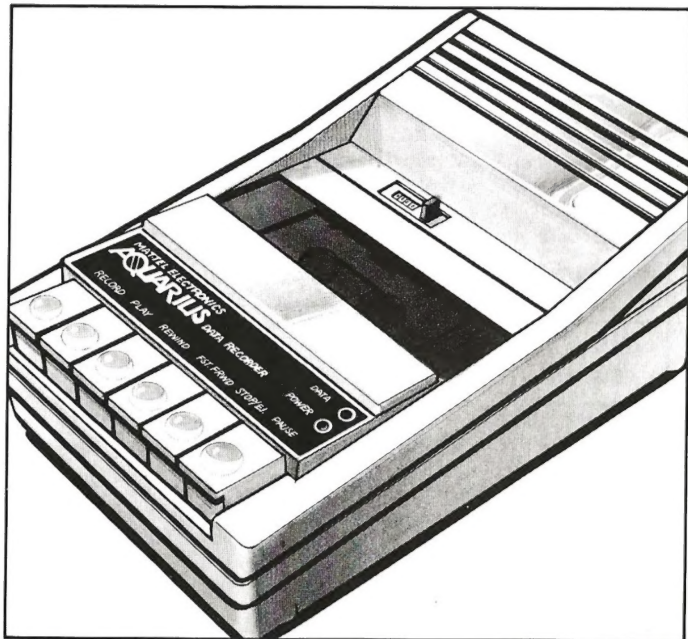
4. Now go ahead and plug the power cord into a 120-volt outlet.


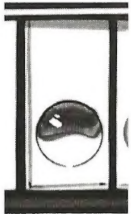

5. Position your Aquarius™ Data Recorder on the far side of your computer, at least two feet out of the direct line of your TV screen.



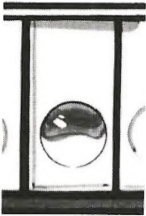


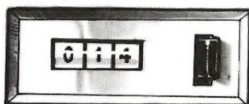
CONTROLS: A BRIEF RUN-THROUGH

Using the controls on your Aquarius™ Data Recorder is as simple as using an ordinary cassette tape recorder. First let's look at the buttons and indicators themselves, just as they appear on your Aquarius™ Data Recorder.



BUTTON/ FEATURE	FUNCTION
<p>STOP/EJ.</p> 	<p>(STOP/EJ) stops the Data Recorder and ejects the cassette tape. When you want to stop the Data Recorder, press the button halfway. When you want to eject a tape or open the lid on the cartridge sector to insert a new tape, press down all the way.</p>
<p>PLAY</p> 	<p>(PLAY) puts the tape in position, so the computer can read data off the tape when a program is recalled. When pressed with (RECORD), data can be put on tape as a program is stored.</p>
<p>REWIND</p> 	<p>(REWIND) winds the tape backward at high speed.</p>

BUTTON/ FEATURE	FUNCTION
<p>FST. FWD.</p> 	<p>(FAST FWD) winds tape forward at high speed</p>
<p>RECORD</p> 	<p>(RECORD) is pressed in combination with (PLAY) to save a program. This “cleans” the tape while recording data sent by the computer. Anything previously written on the tape is erased as new data is recorded.</p>
<p>PAUSE</p> 	<p>(PAUSE) momentarily suspends (PLAY) or (RECORD) functions without the risk of incorrectly saving data.</p>

**BUTTON/
FEATURE****FUNCTION****TAPE
COUNTER
&
RESET
BUTTON**

These are the tape counter and the reset button. The counter helps you take note of where your programs are located on a given cassette. The reset button pushes the counter back to zero.

POWER

This is the **POWER LIGHT**. It tells you that your Data Recorder is receiving power during use.

DATA

This is the **DATA LIGHT**. It's part of the "smart" function of the Data Recorder, because it tells you when the recorder is relaying data during a load function or when it is receiving data during a save function.

CHAPTER 2

BASIC SAVE AND LOAD

JUST SO YOU KNOW

The instructions found in this chapter are for programs written in the BASIC language that's written into the Aquarius™ Home Computer System. They do not apply to other cartridge programs (FINFORM, etc.), which may contain their own commands for saving and loading instructions.

We are going to cover the recording and recall program data in three parts. Recording and re-use of programs come under the BASIC commands of CSAVE and CLOAD. When we're not referring to either of these commands, recording is always called saving and recalling is always called loading.

The first part of this chapter is here in case you just set up your Aquarius™ Home Computer System. Maybe you don't know much about it, but you'd like to see how your Aquarius™ Data Recorder saves and loads program data. Or maybe you know exactly what to do, but you'd like to run a simple test on your Aquarius™ Data Recorder. In either of these cases, Sections A, B and C are for you. On the other hand, you may

have been using an ordinary cassette recorder to save and load your programs and might be anxious to get started using the Aquarius™ Data Recorder. If you want, skip Section A, but look at Sections B and C. They're there for quick reference on saving and loading.

LET'S GET READY

We'll go ahead and make sure everything is ready before beginning. This involves the following steps:



1. Insert a 30 or 60 minute cassette into your Aquarius™ Data Recorder. High quality, low noise recording tape will give the best results.

2. Be sure your TV is turned on. Do this before turning on your computer.

3. If you're using a cassette that has program information, locate your data using the tape counter. Rewind the tape to the beginning and set the tape counter to 0. Then FAST FORWARD the tape until the tape counter reads the number of your program load, or beginning point.

If you plan on following the steps in Section A, use a blank cassette ONLY. Rewind to the beginning, then press **PLAY** and let it run for ten seconds, to make sure that you don't record over the blank leader tape.

SECTION A

"THIS IS ONLY A TEST. . ."

Just to show you how the save and load functions work, we're going to do a test run on them. If you don't know anything about programming yet, that's okay--just follow along with the step-by-step plan and you'll get a very good idea of how your Aquarius™ Home Computer System and Date Recorder work together to save and load programs--with your help, of course.

1. First, press the **RST** and **RTN** keys on your computer keyboard. Type this statement, exactly as it's shown below:

10 PRINT "ONLY A TEST"

2. Then press **RTN** on your computer keyboard.

3. TYPE **CSAVE "TEST"**

4. Then press **RTN**.

5. These directions will show on your TV screen:

Press **RECORD**

Press **RETURN** key to start

Press **RECORD** and **PLAY** on your Data Recorder at the same time.

6. Then press **RTN** on your computer.
7. Wait a couple of seconds while your computer sends your test into the Data Recorder for saving. You'll hear a high pitched whine come out of your TV set. Not to worry -- this is the sound of your test being saved. You'll always hear this sound when data is saved. Also note that the **DATA LIGHT** on your Data Recorder has come on.
8. When the test is completely saved, your TV screen will show:

OK
■
9. Press the **(STOP/EJ)** button on your Data Recorder.
10. Type **NEW** and press **RTN**. This erases the memory of the **Aquarius™** Home Computer System and prepares it for loading the test back into the computer from tape.
11. Now we'll load the test back into memory. Rewind your cassette, then press **(STOP/EJ)**. When it reaches the beginning, press **(PLAY)** and press **RTN** on your keyboard. Let the tape advance for ten seconds, then press **(STOP/EJ)** again.
12. Type **CLOAD "TEST"**. Then press **RTN**.

13. Your TV screen will show:
Press PLAY
Press RETURN key to start

14. Press **RTN** on your keyboard, then **PLAY** on your Data Recorder.

15. Your Aquarius™ Home Computer System begins searching the information coming from the tape as the Aquarius™ Data Recorder "hands it off". As soon as the computer finds the test, your TV screen will show:

Found: "TEST"

16. Your program is automatically loaded into the memory of your Aquarius™ Home Computer System. Note how the DATA LIGHT has come on. When loading is complete, the TV screen will show:

OK



17. Press the **STOP/EJ** button on your Data Recorder. The test is now back in the memory of the computer.

18. Type **LIST** and press **RTN**. The TV screen will show:

10 PRINT "ONLY A TEST"

This means you've successfully loaded your test back into memory.

19. Type **NEW** and press **[RTN]**.

Generally, this is the way in which program data is saved and loaded. Once you get the hang of programming, you'll want to refer to the complete instructions found under Sections B and C. Please go ahead and look them over. They contain some additional information that can be used after you start saving and loading data on a regular basis. For now, you can see how easy it is to save and load. You're ready to put your Aquarius™ Data Recorder to work whenever you need it.

NOTE: If something didn't go right while following the preceding steps, please look at the last section of this guide -- **TROUBLESHOOTING.**

SECTION B SAVING YOUR PROGRAMS ON CASSETTE

This section covers program saving procedures for the Aquarius™ Home Computer System. Instructions for loading are found under Section C.

Before you begin make sure:

- (1) You are not recording over a portion of data already saved.
- (2) If you are starting at the beginning of a fresh tape, you have advanced the tape about ten seconds. There is a plastic leader, a piece of unrecordable tape at the beginning of most cassettes. If you don't advance your tape to the magnetic, recordable portion, you may lose some of your data when trying to save. Your only alternative to a ten-second advance at the beginning of a cassette is the use of a leaderless tape, which is all magnetic from beginning to end, with no plastic leader. This can be found in most good audio and computer stores.
- (3) You note the beginning and end of your save according to the reading on your tape counter. The beginning is called the LOAD POINT. The end is called the END POINT.

C-S-A-V-E (CTL-A)

1. When you're ready to save a program, type **CSAVE**, or hold down the **CTL** key and press A. Follow this by typing in your program filename in quotes. This should be no more than six characters long. You must name the file you want to save, and it must be in quotes. Otherwise the computer won't know what to save and you'll get an Error message. After naming your file, press **RTN**.
2. Your TV screen will show:
Press RECORD
Press RETURN key to start
Press **PLAY** and **RECORD** on your Recorder at the same time, then press **RTN** on your computer.
3. Wait a few seconds while the computer sends your data to the Data Recorder for saving. As soon as the data reaches your Aquarius™ Data Recorder, the DATA LIGHT comes on. You'll also hear a high-pitched whine through your TV set. This is the sound of your program being saved. When the data is completely saved, your TV screen will show:

OK



4. Press **(STOP/EJ)** on your Data Recorder. Type **NEW** only after you've verified that your program was correctly saved.

VERIFY

After you've saved or loaded a program, you may want to verify the save or load, so you'll be sure everything was copied correctly. You can do this only when the program is still in the computer's memory.

1. When you're ready to verify a saved or loaded program, use the **CLOAD?** command. This command is used to verify a **CSAVE** or **CLOAD** and must always be followed by a question mark. First though, rewind your cassette to the load point for your saved/loaded data.
2. Type **CLOAD?** followed by the program filename in quotation marks, exactly the way you typed it when you saved the program.

3

Your TV screen will show:

Press PLAY

Press RETURN key to start

Press **RTN** on your computer keyboard. Then press **PLAY** on your Data Recorder. If you think you missed your load point, rewind the tape and start again at step 1.

4

When your program is found and verified to match the data still in memory, your TV screen will show:

Found: (filename)

OK



If the data on cassette doesn't match the data in memory, your TV screen will show:

Bad

OK



The **OK** below **Bad** does not mean everything's okay. It just means try again. Try saving or loading one more time, then verify again.

SECTION C LOADING YOUR PROGRAM INTO MEMORY

This section covers program loading procedures for the Aquarius™ Home Computer System. Instructions for saving are found under Section B.

Before you begin, make sure:

- (1) You are not loading data while other data you wish to save remains in memory. Loading automatically gives a NEW command which replaces any data in memory.
- (2) You are at load point, the point on tape where a saved program begins.

C-L-O-A-D (CTL-Z)

1. When you're ready to load a saved program back into memory, locate your load point on cassette using the **REWIND** or **FAST FWD** buttons.
2. Once you've found your load point, type **CLOAD** or hold down the **CTL** key and press Z. Follow this by typing your program filename in quotes, exactly the way you did when naming the program for your save. If you don't enter the filename, the computer loads the first program it finds. After typing the filename, press **RTN**.

3. Your TV screen will show:
Press PLAY
Press RETURN key to start
Press **RTN** on your computer first. Then
press **PLAY** on your Data Recorder.

4. As soon as you press **PLAY**, the Data
Recorder begins searching for the
program you named. When the
computer recognizes your program
filename, your TV screen will show:
Found (filename)

5. After your program is found, the Data
Recorder automatically begins sending
data to the computer for loading. Note
how the DATA LIGHT on the Data
Recorder comes on. When loading is
completed, your TV screen will show:

OK



The DATA LIGHT on the Data Recorder
turns off.

6. Press **STOP/EJ** on your Data Recorder.
Type **RUN** or **LIST** to begin using your
loaded data.

7. To verify that your loaded data matches
the data on tape, see verify instructions
on page 17.

APPENDIX

THIS IS THE REFERENCE SECTION

This is the reference section, where you'll find useful bits of information on maintaining and keeping records on your cassettes and taking care of your Aquarius™ Data Recorder. There is also a troubleshooting section, to help you figure out any minor problems that might occur.

APPENDIX 1: SAVING AND LOADING ARRAYS

Arrays are a special operation for the experienced user. For information on saving and loading arrays, refer to your Aquarius™ Guide To Home Computing.

APPENDIX 2: MAINTAINING YOUR CASSETTES

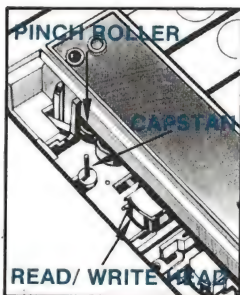
These tips may help you keep your cassettes and their program data in good shape.

1. Avoid contact between fingers and cassette tape.
2. Keep cassette tapes out of extreme temperatures.
3. Keep cassette tapes away from magnetic or electrical fields (like your TV set).
4. Store cassette tapes in their containers.

5. Always protect cassettes with important data by removing the tabs in the back of the cassette. This prevents you from recording on the tape. If you decide to record over, cover the gaps with cellophane tape.

APPENDIX 3: MAINTAINING YOUR DATA RECORDER

With repeated use, the heads and other components of the cartridge space in your Data Recorder require cleaning. This is easily done with cotton swabs and 95% denatured alcohol. **DO NOT** use solvents of ANY KIND. This will destroy your tape head.



Turn your computer OFF. Press **(STOP/EJ)** to open the lid on the cartridge space. Press **(PLAY)** to extend the read/write head. Wipe the tape heads very carefully with the swab, moistened (not soaked) in the alcohol. Bring the swab into contact with the capstan and pinch roller as they turn. Don't press too hard or you may jam them. Don't insert any tape for two or three minutes after cleaning.

To clean the exterior of your Aquarius™ Data Recorder, disconnect it from your computer and the wall outlet. Wipe the casing with a cloth dampened in mild detergent. Don't use solvents, furniture wax or sprays.

Demagnetizing the heads. After a long period of use, the heads inside your Data Recorder may become magnetized. This can generate noise and result in errors. Obtain a demagnetizer and erase the heads regularly.

APPENDIX 4: MAINTAINING RECORDS OF YOUR PROGRAMS

It is vitally important to keep records of the programs and data you save. This can range from a simple log book containing a list of cassettes, programs and filenames, load and end points, to actual individual packets for each cassette in addition to the logbook.

When you feel that you need to keep more complex records, we recommend that you store one program per side on a cassette tape. If you use an Aquarius™ Printer, keep sample printouts of your programs with the cassette and an information sheet on each program. Do this for each program, and store cassette, printout and instructions in a three-hole plastic envelope so that you can store a number of them in a ring binder. Always make a backup of your recorded program and store it in a separate place. Here is an example of the kind of detailed record you can keep on your cassettes.

PROGRAM SHEET

Program Filename	_____
Cassette No.	_____
Data Written	_____
Author	_____
Backup? (Yes/No)	_____
Location	_____
Load Point	_____
End Point	_____
Record of Use	_____
Comments	_____

Problems are often caused by a mistake in operation. If you think something is wrong with your Data Recorder, check the points below first. The trouble may be in another component of your Aquarius™ Home Computer System. Check your computer, connections or the cassette tape itself. If you can't seem to clear up the problem after going through the points below, contact your dealer.

TROUBLESHOOTING

Symptom	Possible Cause	Remedy
Tape does not travel.	<ol style="list-style-type: none">1. Disconnected power cord.2. Tape is wound out.3. PAUSE button is down	<ol style="list-style-type: none">1. Connect cord.2. Rewind tape.3. Release PAUSE.
No data on tape.	<ol style="list-style-type: none">1. Using a blank tape.2. Incorrect load point.3. Incorrec save operation.4. Incorrect conection to computer.	<ol style="list-style-type: none">1. Find your recorded tape.2. Find correct load point.3. Refer to CHAPTER 3 Section B.4. Reconnect equipment (see page 3).
No save	<ol style="list-style-type: none">1. Tape tabs out.2. Incorrec save operation.	<ol style="list-style-type: none">1. Cover tape tab gaps with cellophane tape.2. Refer to CHAPTER 3 Section B.
Program requires repeated saves or loads.	<ol style="list-style-type: none">1. Worn tape.2. Low quality tape.3. Heads are dirty or magnetized.	<ol style="list-style-type: none">1. Replace with new tape.2. Replace with high quality, low-noise tape.3. Clean or demagnetize heads.

Symptom	Possible Cause	Remedy
MO Error Message when trying to load.	1. You have entered a CSAVE command without a filename.	1. Advance tape under PLAY for ten seconds.
Data is only partly saved.	1. Tape is not advanced beyond plastic leader. 2. You are missing your load point.	1. Advance tape under PLAY for ten seconds. 2. Press PLAY and RECORD before RTN.

90-DAY WARRANTY

Mattel Electronics warrants to the original purchaser of any AQUARIUS™ cartridge, cassette, or disc it manufactures that the product will be free of defects in material or workmanship for 90 days from the date of purchase under normal inhome use.

Mattel Electronics will not assume any liability or responsibility for loss or damage, direct or indirect, caused by or alleged to be caused by any AQUARIUS™ cartridge, cassette, or disc (software programs) or the use made of any such program by the consumer. This disclaimer includes but is not limited to any interruption of service, loss of money, or anticipatory profits resulting from the use of operation of such programs.

Mattel Electronics sole obligation under this warranty will be to repair or replace the defective product, at it's option. If defective, return cartridge, cassette or disc along with proof of the date-of-purchase to either your local dealer or postage prepaid to:

Mattel Electronics Service Center (East)
10 Abeel Road
Cranbury, New Jersey 08512

or

Mattel Electronics Service Center (West)
13040 East Temple Avenue
City of Industry, California 91746

This warranty excludes incidental or consequential damages resulting from the product or use of the product. (Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you.)

This warranty gives you specific legal rights and you may also have other rights which vary from state to state. This warranty does not cover damage resulting from purchaser abuse, accident, negligence, or damages subsequent to purchase.

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